

### REMARKS

The present amendment is made in response to the Office Action dated October 3, 2002 and identified as Paper No. 6. In the Action, the Examiner objected to the Abstract as containing more than 150 words. Claim 1 was rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,902,445 to Bjorhaag et al. ("*Bjorhaag*"). Claims 1-4 were under 35 U.S.C. § 103(a) as unpatentable over EP0222720A to Kallstrom ("*Kallstrom*") in view of *Bjorhaag*. The Examiner also rejected claim 6 under 35 U.S.C. § 103(a) as obvious over *Kallstrom* in view of *Bjorhaag* in further view of U.S. Patent No. 4,037,650 to Randall ("*Randall*"). Claim 7 was rejected under 35 U.S.C. § 103(a) as unpatentable over *Bjorhaag* in view of U.S. Patent No. 4,409,107 to Sugano ("*Sugano*"). Claims 8 and 9 were rejected under 35 U.S.C. § 103(a) as unpatentable over *Bjorhaag* in view *Sugano* in further view of U.S. Patent No. 3,981,831 to Markusch ("*Markusch*"). Claims 7-12 were rejected under 35 U.S.C. § 103(a) as unpatentable over of *Kallstrom*, *Bjorhaag*, *Sugano*, and *Markusch*. Claim 14 was rejected under 35 U.S.C. § 103(a) over *Kallstrom*, *Bjorhaag*, *Sugano*, and *Markusch* in further view of *Randall*. Claims 1-4, 6-12 and 14 remain pending in the application.

With regard to the objections to the Abstract, it has been amended to conform with MPEP § 608.01(b) and include less than 150 words.

With regard to the rejection of claim 1 as anticipated by *Bjorhaag*, the cited reference discloses a wood binder material comprised of sodium silicate, a sulfur compound, and a calcium/magnesium compound that is mixed with wood fibers and formed into particle board by heat and pressure. *Bjorhaag* also discloses the addition of hydrophobic agents to protect the particle board from possible water damage if exposed to the elements. Claim 1, however, recites a wall formed from water glass, calcium chloride, and a wicking agent, *i.e.*, an agent that is

*hydrophilic* and will bind excess water. By contrast, *Bjorhaag* discloses the use of a *hydrophobic* agent that repels water, rather than binding it, and thus does not disclose the use of a wicking agent as required for a rejection under 35 U.S.C. § 102(b). Additionally, *Bjorhaag* teaches that all three of its generic compounds must be used in conjunction with wood fibers to form a board having improved fire resistance. In the absence of any one of the compounds (or the lignin containing wood fibers), the compounds of *Bjorhaag* could not be formed into a wall as set forth in claim 1 in the present application.

With regard to the rejection of claims 1-4 as in view of *Kallstrom* and *Bjorhaag*, the proposed combination does not disclose each and every element of the claimed invention as neither *Bjorhaag* nor *Kallstrom* disclose the claimed wicking agent. As claims 2-4 depend from allowable claim 1, they are also allowable.

With regard to the rejection of claim 6 as obvious over *Kallstrom* in view of *Bjorhaag* in further view *Randall*, the proposed combination does not disclose the claimed limitation that the phase change material be “composed of dibasic and tribasic sodium phosphate, and water.” In particular, *Randall* does not disclose a heat resistant composition and merely describes a heat transfer system for heating and cooling an enclosure, such as a home, by using an aqueous crystallizable salt solution to store heat energy. By contrast, the claimed invention uses a solid composition of dibasic sodium phosphate, tribasic sodium phosphate, and water to form an inner wall having improved heat resistance.

The cited references also lack the motivation or suggestion to make the proposed combination as required for a *prima facie* case of obviousness. See MPEP § 2313.01. According to the Examiner, the motivation to combine *Randall* and *Kallstrom* stems from the improved heat resistance of the composition in *Randall*. *Randall* does not suggest that its

aqueous solution could be formed into solid walls having improved heat resistance, or even that the solution has improved heat *resistance*. Instead, *Randall* merely discloses that the aqueous solution may be used for heat *storage* if placed in a vessel.

The rejection of claim 7 as obvious over *Bjorhaag* in view of *Sugano* is improper because *Sugano* is non-analogous art. See MPEP § 2141.01. Whether prior art is analogous is determined by two criteria: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *Wang Laboratories, Inc. v. Toshiba Corporation*, 993 F.2d 858, 864, 26 U.S.P.Q.2d 1767 (Fed. Cir. 1993). *Sugano* is undoubtedly not within the same field as endeavor as the presently claimed invention as the reference relates strictly to a novel method for producing sodium percarbonate, which is not recognized as a heat resistant material. With regard to the second criteria, *Sugano* fails to disclose that sodium percarbonate would provide any degree of improved fire resistance or that any of the compounds used to create the sodium percarbonate, either individually or collectively, possess such capabilities. Thus, *Sugano* is not analogous art as it is not reasonably pertinent to the problem the inventor was trying to solve in the instant case and it is entirely outside the realm of fire and heat protection and therefore cannot be used as a reference under 35 U.S.C. § 103. See *Wang*, 993 F.2d at 864.

Even if *Sugano* and *Bjorhaag* are properly combinable, the proposed suggestion or motivation to combine the references is insufficient to form a *prima facie* case of obviousness under 35 U.S.C. § 103(a). According to the Examiner, *Sugano* motivates the use of dibasic sodium phosphate because it would improve storage stability. *Sugano* does not actually disclose that dibasic sodium phosphate would improve stability. Instead, *Sugano* discloses the use of a

phosphate salt as a *catalyst* in the production of sodium percarbonate from sodium carbonate and hydrogen peroxide. The *stabilizer* disclosed in *Sugano* is an organic chelating agent, *e.g.*, N,N,N,N,-tetra(phosphonomethyl)-diaminoalkane, an unrelated compound that helps improve the stability of the final product. Thus, it is not the phosphate salt in *Sugano* that improves stability, it is the organic chelating agent. As a result, *Sugano* does not suggest or motivate the use of dibasic sodium phosphate to improve stability.

With regard to the rejection of claims 8 and 9 as unpatentable over *Bjorhaag* in view of *Sugano* and in further view *Markusch*, the proposed combination does not teach each and every element of the claimed invention and there is no motivation to make the proposed combination as required for a *prima facie* case of obviousness. According to the Examiner, *Markusch* teaches that the addition of calcium metasilicate and propylene glycol would improve dimensional stability. *Markusch* is directed toward an organic/inorganic foam plastic composed of an organic polyisocyanate, an alkali metal silicate, and an organic amphiphilous compound. *Markusch* expressly states, however, that only sodium and potassium silicate are meant by the term “alkali metal silicate” and thus does not disclose calcium metasilicate. While *Markusch* does state that crude substances that contain some calcium silicate ( $\text{Ca}_2\text{SiO}_4$ ) are acceptable, calcium metasilicate is not disclosed as an acceptable alkali metal silicate. Thus, the proposed combination of references lacks the express claim element calling for calcium metasilicate ( $\text{CaSiO}_3$ ).

As *Markusch* does not disclose calcium metasilicate, it certainly cannot motivate its use in the claimed invention and thus does not provide the requisite suggestion for an obviousness rejection. The cited references also lack a suggestion to the use of propylene glycol to improve dimensional stability, as proposed by the Examiner. Propylene glycol is disclosed in *Markusch*

as an acceptable organic amphiphilous compound for enhancing the phase interface and promoting the foaming properties of the inorganic/organic plastic. As the present invention does not involve a foam plastic, any suggestion in *Markusch* to use propylene glycol as a foaming agent in an organic/inorganic plastic is irrelevant to the use of propylene glycol in conjunction with claimed inorganic phase change material.

With regard to the rejection of claims 7-12 as unpatentable under 35 U.S.C. § 103(a) in view of *Kallstrom*, *Bjorhaag*, *Sugano*, and *Markusch*, the various combinations proposed by the Examiner and the motivation to make those combinations are insufficient to support a rejection of obviousness under 35 U.S.C. § 103(a). As explained above, *Bjorhaag* does not motivate the use of a wicking agent (and does not even disclose the use of dibasic sodium phosphate), and instead discloses the addition of water-*resistant* compounds. Even if *Sugano* is considered analogous art, the reference does not suggest that the claimed calcium salt would improve storage stability because the salt in *Sugano* is used as a catalyst in the disclosed reaction, rather than as the stabilizer. Finally, *Markusch* does motivate the use of calcium metasilicate, which it does not disclose, and fails to motivate the use of propylene glycol, because the claimed invention is not an organic/inorganic foam plastic that would benefit from a foaming agent.

With regard to the rejection of claim 14 as unpatentable over *Kallstrom*, *Bjorhaag*, *Sugano*, and *Markusch* in further view of *Randall*, the proposed combination does not disclose the claim limitation that the phase change material be “composed of dibasic and tribasic sodium phosphate, and water,” as explained with regard to claim 6. In particular, *Randall* uses an aqueous crystallizable salt solution to store heat energy while the claimed invention uses a solid composition of dibasic sodium phosphate, tribasic sodium phosphate, and water to form an inner wall having improved heat resistance. *Randall* also lacks any motivation or suggestion to make

the proposed combination as the reference does not indicate that the disclosed heat storage solution would have improved heat resistance or that it could be used in solid form as a heat resistant wall as suggested by the Examiner.

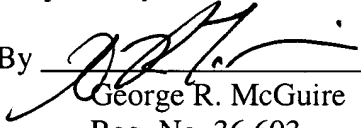
Submitted herewith is a Petition for a 2 month extension, and a check in the amount of \$205 for the Petition. Please charge any deficiencies or credit any overpayment to Deposition Account 50-0576.

In view of the present amendment as supported by the foregoing remarks, the Examiner's reconsideration is respectfully requested.

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Respectfully submitted,

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I hereby certify that this correspondence is being placed with the U.S. Postal Service as First Class Mail on this February 25, 2003 addressed to Assistant Commissioner for Patents, Washington D.C. 20231

  
George R. McGuire

Dated: February 25, 2003

## VERSION TO SHOW CHANGES MADE

### IN THE ABSTRACT:

Paragraph beginning at page 20, line 1, has been amended as follows:

The present invention contemplates water-bearing silicate materials [for fire protection which are essentially dry when cured. The dryness property is] achieved by modifying the basic method of essentially reacting water glass with calcium chloride [in such a way as] to bind the free water into solid form without adversely affecting the basic chemical and physical structure of the original product. [The invention further contemplates the incorporation of these materials into one or more fire protection container configurations such as a multilayered structure in which the insulation forms the outermost wall of the container, an intermediate layer comprising a light weight porous, thermal insulator such as urethane foam, and an innermost layer comprising a phase change material with a melting point of around 70 degrees F to 125 degrees F, depending on the heat bearing characteristics of the objects to be protected. The basic method of drying the insulation material is by physically wicking the excess water from the cured parent material through use of a cellulose sponge material. Two other methods are also disclosed to bind the free water in the insulation material. The first of these includes the addition of an anhydrous salt to the slurry to form a crystalline hydrate. Dibasic sodium phosphate ( $\text{Na}_2\text{HPO}_4$ ) works effectively for this purpose. The second method includes the addition of calcium oxide or calcium hydroxide to the slurry. This converts soluble and/or colloidal silica ( $\text{SiO}_2$ ) present in the mixture to calcium silicate ( $\text{CaSiO}_3$ ), thereby resulting in a material microstructure which provides more effective physical retention of the water] The material is then dried by using a physical wicking agent, such as a cellulose sponge, adding an anhydrous salt to the material to form a crystalline hydrate, or adding calcium oxide or calcium hydroxide to the material to form

a microstructure that physically retains the water. The material is then incorporated into a fire protection container in which the material forms the outermost wall of the container, a light-weight porous material such as urethane foam an intermediate layer, and a phase change material with a melting point of around 70 degrees F to 125 degrees F forms the innermost wall.